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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,180	08/27/2001	Hideyuki Harada	P/1071-1440	7067
7590 12/16/2003			EXAMINER	
STEVEN I. WEISBURD DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP 1177 AVENUE OF THE AMERICAS 41ST FLOOR NEW YORK, NY 10036-2714			MAYES, MELVIN C	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/941,180

Applicant(s)

HARADA ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

(1)

Claim 1 is objected to because of the following informalities: it should read "wherein said sintered plate of fired first ceramic functional material is disposed in said cavity..."

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

(2)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(3)

Claims 1, 4-7, 9-12, 14, 16 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kodama et al. 5,277,723.

Kodama et al. disclose a method of producing a multilayer ceramic body comprising: making a multilayer ceramic capacitor by layering and firing electrode printed and via-wired green sheets of barium titanate; printing green sheets of borosilicate glass and alumina filler with via wirings and surface wirings; in some of the green sheets, punching holes larger than the made capacitor; layering green sheets and the capacitor so that the capacitor is positioned inside the laminate and the electrodes and via-wiring of the capacitor are connected to the wirings of the green sheets; sandwiching the laminate between dimensionally stable, constraining-force-applying alumina porous plates; firing at 900°C; and removing the porous plates. The green

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sheets comprise 75 vol% borosilicate glass powder. Kodama et al. further disclose that the fired built-in structure can be a functional parts such as a capacitor or contain many small parts such as chip capacitors, resistors and coils (col. 7, lines 26-58, col. 13, lines 50-68, col. 27, line 28 – col. 28, line 51).

***Claim Rejections - 35 USC § 103***

(4)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(5)

Claims 8, 13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama et al. in view of Nomura et al. 5,335,139.

Kodama et al. disclose that the green sheets comprise 75 vol% borosilicate glass powder and 25 vol% alumina powder filler. Kodama et al. does not disclose that the multilayer ceramic capacitor has a thickness of 100  $\mu\text{m}$  or less.

Nomura et al. teach that in making a multilayer ceramic chip capacitor, each dielectric layer preferable has a thickness up to about 50  $\mu\text{m}$ , especially up to about 20  $\mu\text{m}$  and lower thickness limit of about 0.5  $\mu\text{m}$ , preferably about 2 $\mu\text{m}$ , and the number of dielectric layers stacked is generally from 2 to about 300, preferably from 2 to about 200 (col. 6, lines 26-34).

It would have been obvious to one of ordinary skill in the art to have provided the multilayer ceramic capacitor in the multilayer ceramic body of Kodama et al. of a thickness of 100  $\mu\text{m}$  or less, as Nomura et al. teach that in making a ceramic chip capacitor, the number of

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stacked dielectric layers is preferably from 2 to 200 and the thickness of the dielectric layers is preferably about 2  $\mu\text{m}$  up to about 20  $\mu\text{m}$ . By making the capacitor by laminating green sheets (dielectric layers) of number and thickness within the preferred ranges as suggested by Nomura et al., a capacitor (sintered plate) of thickness which encompasses the thickness range of 100  $\mu\text{m}$  or less, as claimed, is provided.

### *Response to Arguments*

(6)

Applicant's arguments filed October 10, 2003 have been fully considered but they are not persuasive.

Applicant argues that in the present invention, by providing the sintered plate, warping or distortion of the surface of the laminate during firing can be retarded. Applicant argues that there is no teaching in Kodama of a plurality of green layers, a green layer having a cavity, a sintered plate of fired first ceramic functional material in the cavity, or the sintered plate having an area smaller than the area of the primary face of the green layer on which it is arranged.

(7)

With respect to the argument that the sintered plate is provided to reduce warping of the surface of the laminate, according to the present specification the restriction layers prevent the green layers of the substrate from shrinking in the direction of their primary faces. There is no description of the sintered plate being used to reduce warping or distortion as argued.

Kodama et al. disclose providing borosilicate green sheets (a plurality of green layers); punching holes larger than the capacitor in some of the green sheets (a green layer having a

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cavity); providing a multilayer fired ceramic capacitor of barium titanate layers and electrodes (a sintered plate of fired first ceramic functional material); layering green sheets including those with the holes and the fired capacitor so that the capacitor is positioned inside the laminate in the holes (a sintered plate of fired first ceramic functional material in the cavity and the sintered plate having an area smaller than the area of the primary face of the green layer on which it is arranged). A fired capacitor placed in a hole in a green sheet of a stack of green sheets would inherently have an area smaller than the area of the green sheet on which it is arranged (see Figures 18 and 19). Kodama thus clearly discloses the present invention as claimed.

### ***Conclusion***

(8)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Branchevsky discloses embedding a capacitor in a substrate by providing LTCC tape layers, one having a cavity, and placing in the cavity dielectric layers which may be fired ceramic tape before firing the tape layers (col. 5, lines 33-35)

(9)

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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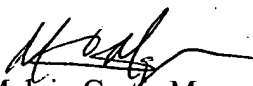
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

(9)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 703-308-1977. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
December 11, 2003